REMARKS

Favorable reconsideration, reexamination, and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks. The foregoing amendments are fully supported by the original claims and the specification, specifically at least, at paragraph [0026]. No new matter is added.

Amendments

Claims 1 and 4 have been amended. Claims 2-3 and 5-7 have been canceled. Claim 10 has been added. Claims 1, 4, 8, and 9 are under examination.

Rejection under 35 U.S.C. § 112, second paragraph

In the Office Action, beginning at page 2, Claims 1-9 were rejected under 35 U.S.C. § 112, second paragraph, as reciting subject matters that allegedly are indefinite. Applicants respectfully request reconsideration of this rejection.

Claim 1 has been amended to overcome this rejection. Specifically, the term "alkane" as it now appears in the claims requires no antecedent. The phrases cited by the Office Action as indefinte or confusing have either been deleted or clarified.

For at least the foregoing reasons, Applicants respectfully submit that the remaining claims fully comply with 35 U.S.C. § 112, second paragraph, and therefore respectfully request withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 112, first paragraph

In the Office Action, beginning at page 2, Claims 1-9 were rejected under 35 U.S.C. § 112, first paragraph, as reciting subject matters that allegedly were not described in the specification so that one skilled in the art could make and/or use the invention. Applicants respectfully request reconsideration of this rejection.

Applicants aver that the deposited material (FERM BP-8153) has been accepted

for deposit under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the purpose of Patent Procedure and that all restrictions on the availability of the public of the material so deposited will be irrevocably removed upon the granting of a patent.

For at least the foregoing reasons, Applicants respectfully submit that the remaining Claims fully comply with 35 U.S.C. § 112, first paragraph, and therefore respectfully request withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 102(b)

In the Office Action, beginning at page 3, Claims 1-9 were rejected under 35 U.S.C. § 102(b), as reciting subject matters that allegedly are anticipated by Higgins et al. and Colby et al. Applicants respectfully request reconsideration of this rejection.

The reliance on the product-by-process doctrine on page 4 of the Office Action to support this rejection is confusing, since the claims recite methods, and not products. As the product-by-process doctrine dictates criteria for the patentability of a particular product based upon the implications of the process by which the product is made, it is unclear how this doctrine applies to the instant method claims.

Higgins et al. disclose the biotransformation of methanol using a crude cell-free extract obtained from *M. trichosporium*. However, Higgins et al. do not disclose transforming an *Escherichia coli* with DNA encoding the specified proteins, i.e. methane hydroxylase, Component B, and a reductase, and culturing the bacteria under the claimed conditions, with the resulting production of alcohol, as claimed. Therefore, it is believed that the present invention is not anticipated by Higgins et al..

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of the remaining claims are not anticipated by Higgins et al., are therefore not unpatentable under 35 U.S.C. § 102(b), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 102(b).

In the Office Action, beginning at page 5, Claims 1-9 were rejected under 35 U.S.C. § 102(b), as reciting subject matters that allegedly are anticipated by Colby et al. Applicants respectfully request reconsideration of this rejection.

As stated above, the reliance on the product-by-process doctrine on page 5 of the Office Action to support this rejection is confusing, since the claims recite methods, and not products. As the product-by-process doctrine dictates criteria for the patentability of a particular product based upon the implications of the process by which the product is made, it is unclear how this doctrine applies to the instant method claims.

Similar to Higgins et al., Colby et al. discuss the biotransformation of methanol using a crude cell-free extract obtained, however obtained from *M. capsulatus*. However, Colby et al. do not disclose transforming an *Escherichia coli* with DNA encoding the specified proteins, i.e. methane hydroxylase, Component B, and a reductase, and culturing the bacteria under the claimed conditions, with the resulting production of alcohol, as claimed. Therefore, it is believed that the present invention is not anticipated by Colby et al..

In the Office Action, beginning at page 6, Claims 1, 2, 3, 7, 8 and 9 were rejected under 35 U.S.C. § 102(b), as reciting subject matters that allegedly are anticipated by Lloyd et al. Applicant respectfully requests reconsideration of this rejection.

Claim 1 has been amended to incorporate limitations of the dependent claims. Furthermore, Lloyd et al. disclose a method for producing methanol from methane by using *M. trichosporium.* However, the claimed invention uses *E. coli*. Furthermore, although optimal temperature for growth of *E. coli* is generally around 37°C, the method of the present invention requires culturing *E. coli* at a much lower temperature, that is, 20 to 30°C, in order to produce alcohol. Lloyd et al. clearly does not disclose or suggest culturing *E. coli* at 20 to 30°C so that alcohol can be produced. Therefore, the present

invention is not anticipated by Lloyd et al.

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of the remaining claims are not anticipated by Lloyd et al., are therefore not unpatentable under 35 U.S.C. § 102(b), and therefore respectfully request withdrawal of the rejection thereof under 35 U.S.C. § 102(b).

Rejection under 35 U.S.C. § 103(a)

In the Office Action, beginning at page 6, Claims 1-9 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of Lloyd et al. in view of the disclosures of Stainthorpe et al. and West et al. Applicants respectfully request reconsideration of this rejection.

The disclosure of Lloyd et al. has been discussed above. Further to this discussion, the three components of methane oxygenase, that is, methane hydroxylase, B component, and reductase, are all required to be used in the method of the claimed invention. None of the cited documents disclose or suggest, either alone or in combination, that all three of these genes could be expressed in a microorganism, such as *E. coli,* that cannot originally assimilate an alkane and alcohol. The claimed invention has made it possible for the first time to impart an ability to produce alcohol from an alkane in the claimed microorganism. Therefore, it is believed that the present invention is not obvious over these references.

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of the remaining claims each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

Conclusion

For at least the foregoing reasons, Applicants respectfully submit that the present patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Examiner Marx believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, she is invited to call on the number below.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is hereby authorized to charge fees necessitated by this paper, and to credit all refunds and overpayments, to our Deposit Account 50-2821.

Respectfully submitted,

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